

WHAT IS CLAIMED IS:

1. A disc processing apparatus comprising a support, a picker arm for lifting and transporting
5 discs, the discs having a planar surface, said picker arm being moveable generally perpendicular to the planar surface of a disc, a picker on the picker arm for picking up a disc for transport, and a sensor for sensing the presence of a disc with the planar surface
10 of the disc at a known position relative to the picker arm.

2. The apparatus of claim 1, wherein the picker arm is movable generally perpendicular to the planar
15 surface of a disc held by the picker.

3. The apparatus of claim 1, wherein said picker arm is moveable along an axis perpendicular to the plane of a disc supported on the picker, and
20 wherein the sensor comprises a mechanical element that engages a disc in a lifting position on the picker to provide a signal indicating that a surface of a disc is at a known relationship to the arm in a direction perpendicular to the plane of the disc.

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4. The apparatus of claim 3, wherein said mechanical element comprises a pivoting lever, said lever having a portion that initiates a signal when the lever pivots due to the lever moving to engage an

object having a surface at a known relationship to the arm.

5. The apparatus of claim 1, wherein said
5 sensor has two states, a first state indicating the
absence of a surface at a known position relative to
the picker arm, and a second state when a surface is at
the known position relative to the picker arm.
- 10 6. The apparatus of claim 1, wherein the picker
arm is mounted on the processing apparatus for movement
substantially parallel to the plane of a disc held by
the picker.
- 15 7. The apparatus of claim 6 including a
controller for controlling movement of the picker arm
perpendicular to and parallel to the plane of a disc
held by the picker.
- 20 8. The apparatus of claim 7, wherein the
movement of the picker arm perpendicular to the plane
of a disc held by the picker is sensed by the
controller.
- 25 9. An apparatus for processing discs including
a frame, an input bin for storing a plurality of discs
in a stack centered along a central axis perpendicular
to the discs, a picker arm for removing discs from the
stack including a disc picker, said picker arm being

moveable in a direction substantially parallel to the central axis, the picker arm overlying a portion of a top disc in the stack when the disc picker is in position to lift a disc, a sensor to sense the presence
5 of a disc on the disc picker with the disc in position to be lifted by the disc picker and provide a signal when a disc is present, and a controller receiving the signal and providing control signals for controlling the apparatus based upon the signal at selected
10 positions of the picker arm.

10. The apparatus of claim 9, wherein the controller includes means to determine whether a proper number of discs are in the stack when the picker is in
15 position to lift the top disc of the stack.

11. The apparatus of claim 9 including a drive for moving the picker arm laterally relative to the axis of the stack, and for positioning the picker arm
20 over a disc support tray for processing.

12. The apparatus of claim 11 wherein the apparatus has a disc support tray moveable to a loading position, and the picker arm being moveable downwardly
25 toward the disc support tray, the sensor being engageable with a disc in the tray to provide the signal when such disc is present in the tray.

13. A compact disc processor including a processing station, and including a disc support tray moveable between a disc loading position and the processing station, a compact disc handler mounted on
5 the processor, said handler having a picker for picking a disc from a storage bin, the handler being moveable from a position overlying the storage bin to a position overlying the tray, and a sensor carried by the handler for sensing when the handler is holding a disc in
10 position for movement between the storage bin and the tray.

14. The processor of claim 13 wherein a controller receives information indicating the position
15 of the handler relative to a height of a stack of discs in the bin, and wherein the sensor provides a signal to the controller when the handler is adjacent to the stack indicating the height of the stack when a top disc in the stack is sensed, the controller correlating
20 the height indicated by the signal to an expected stack height.

15. The method of determining the number of discs that have been removed from a stack of discs by a
25 robotic handler after the handler has removed at least one disc from the stack and deposited the at least one disc in a remote location, comprising moving the handler to overlie the stack, sensing when the handler is at a level adjacent the stack, and comparing the

position of the handler when it is at the sensed level adjacent the stack with a reference indicating the correct height of the stack to determine whether more than one disc was removed.

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16. The method of claim 15 wherein said sensor comprises a mechanical sensor that senses a surface in the position of a disc capable of being supported on the handler.

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17. A method of error checking for a compact disc processor having an extendable and retractable disc support moveable from a disc loading position to a processing station, an input disc storage bin for supporting a stack of a plurality of discs centered on an axis, and a handler comprising a picker moveable parallel to the axis and laterally to the axis to lift and move a disc from the stack to the tray when the tray is in a loading position, comprising the steps of
15 depositing a disc in the tray, moving the handler back to overlie the stack and moving the handler to a position to sense the height of the stack, and
20 determining if the height of the stack is correct for removal of a single disc.

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18. The method of claim 17 wherein prior to moving the handler to lift and move a disc from the stack, the handler is moved to overlie the tray in the

loading position, moving the handler toward the tray to sense whether there is a disc in the tray.

19. The method of claim 17 wherein a disc is processed
5 and the tray is moved to the loading position with the
processed disc, moving the handler in a cycle having a
down portion and an upward portion to pick up the
processed disc, sensing whether a processed disc is
supported by the handler in the up portion of the
10 cycle, and moving the tray to the processing station
and back to the unloading station if no disc is
supported in the up portion of the cycle.